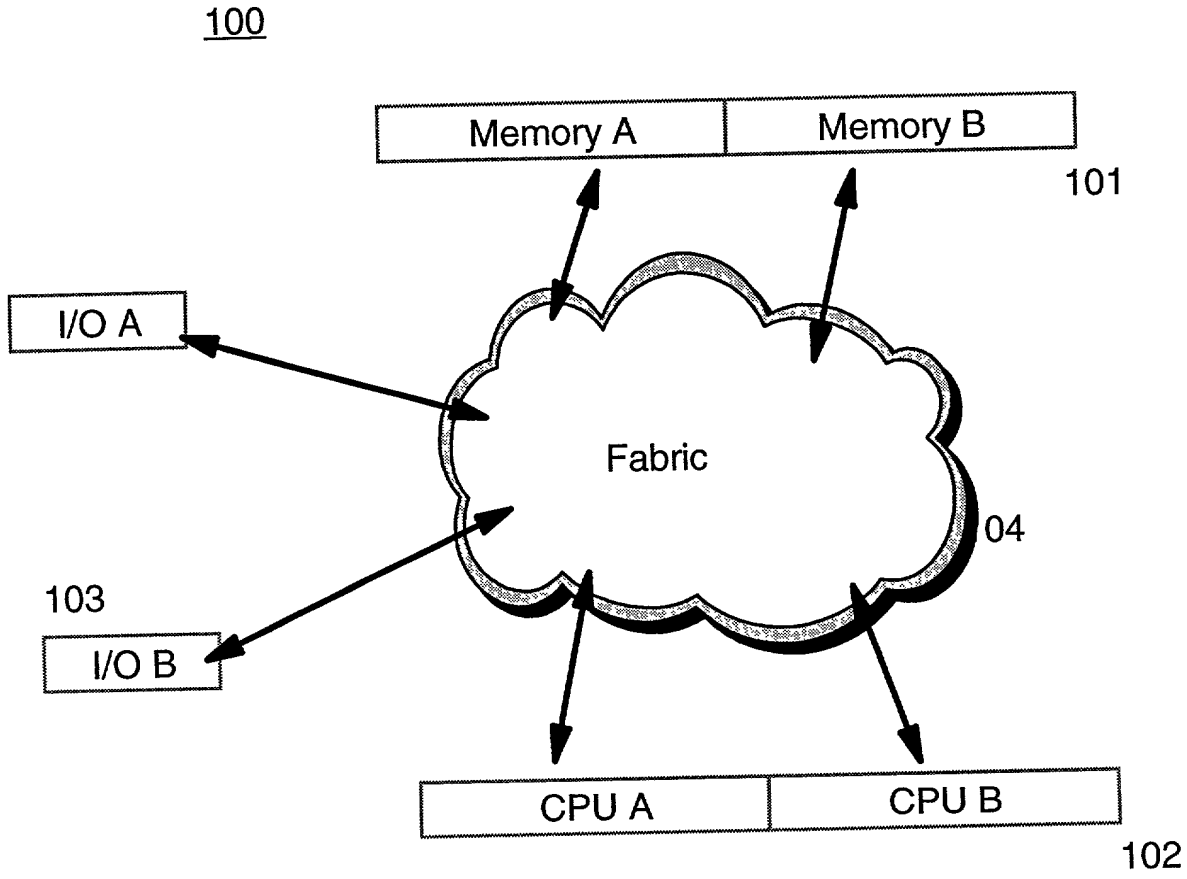

Figure 1

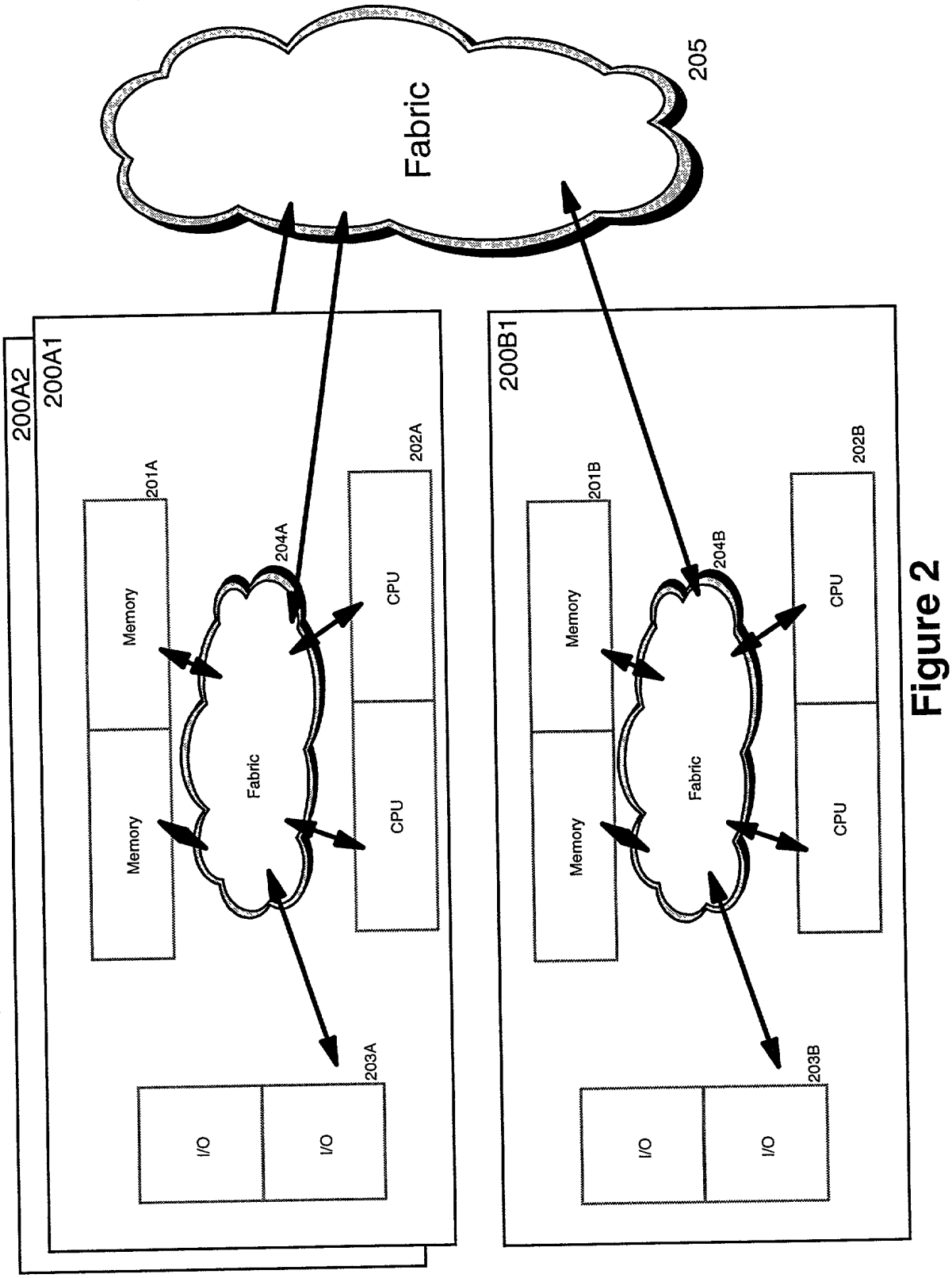
Fabric
205
200A2
200A1
Memory
201A
Memory
Fabric
204A
CPU
202A
CPU
I/O
I/O
203A
200B1
Memory
201B
Memory
Fabric
204B
CPU
202B
CPU
I/O
I/O
203B

Figure 2

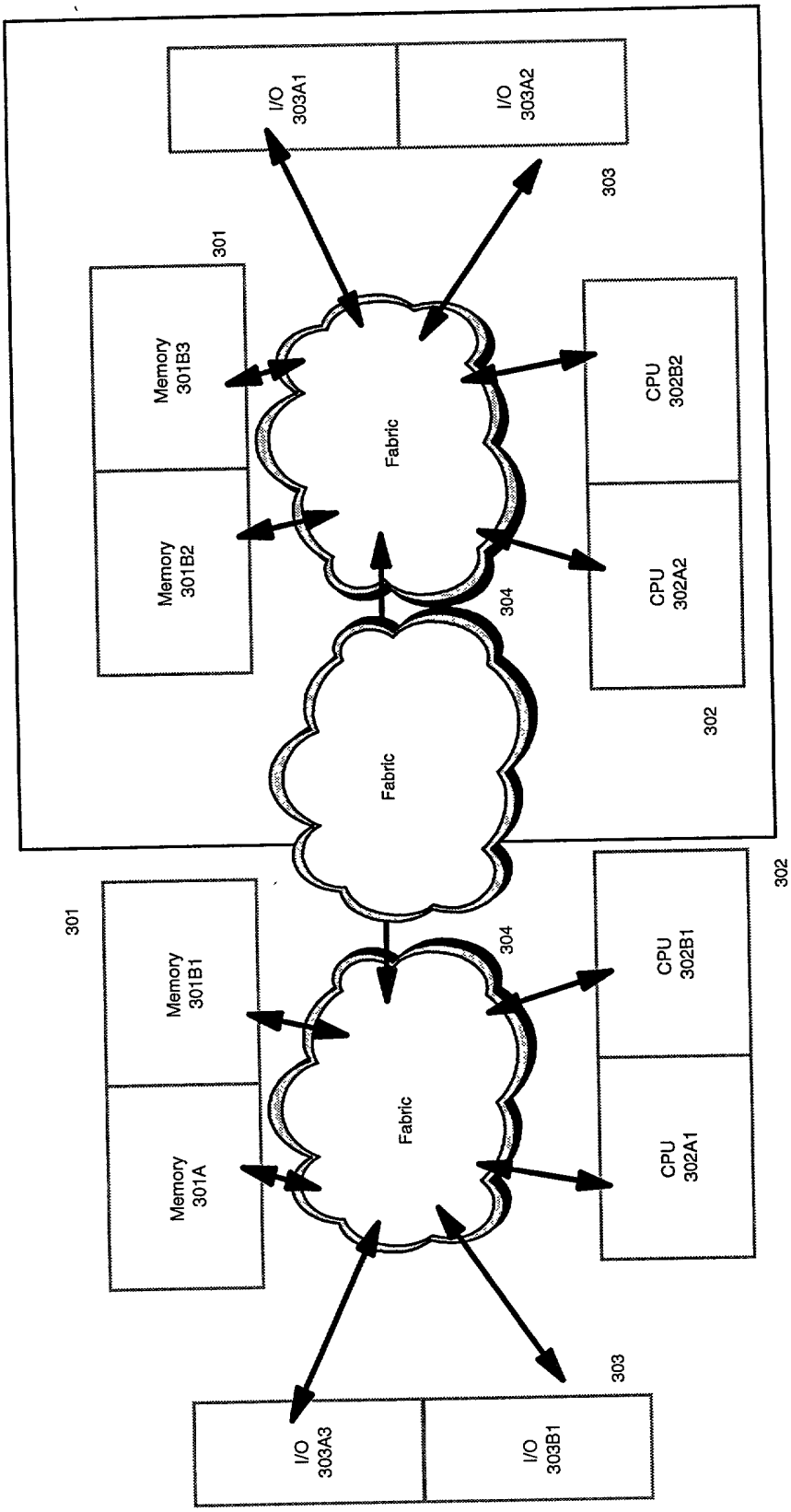
I/O 303A1
I/O 303A2
303
301
Memory 301B3
Memory 301B2
Fabric
CPU 302B2
CPU 302A2
304
Fabric
302
301
Memory 301B1
Memory 301A
Fabric
304
CPU 302B1
CPU 302A1
302
I/O 303A3
I/O 303B1
303

Figure 3

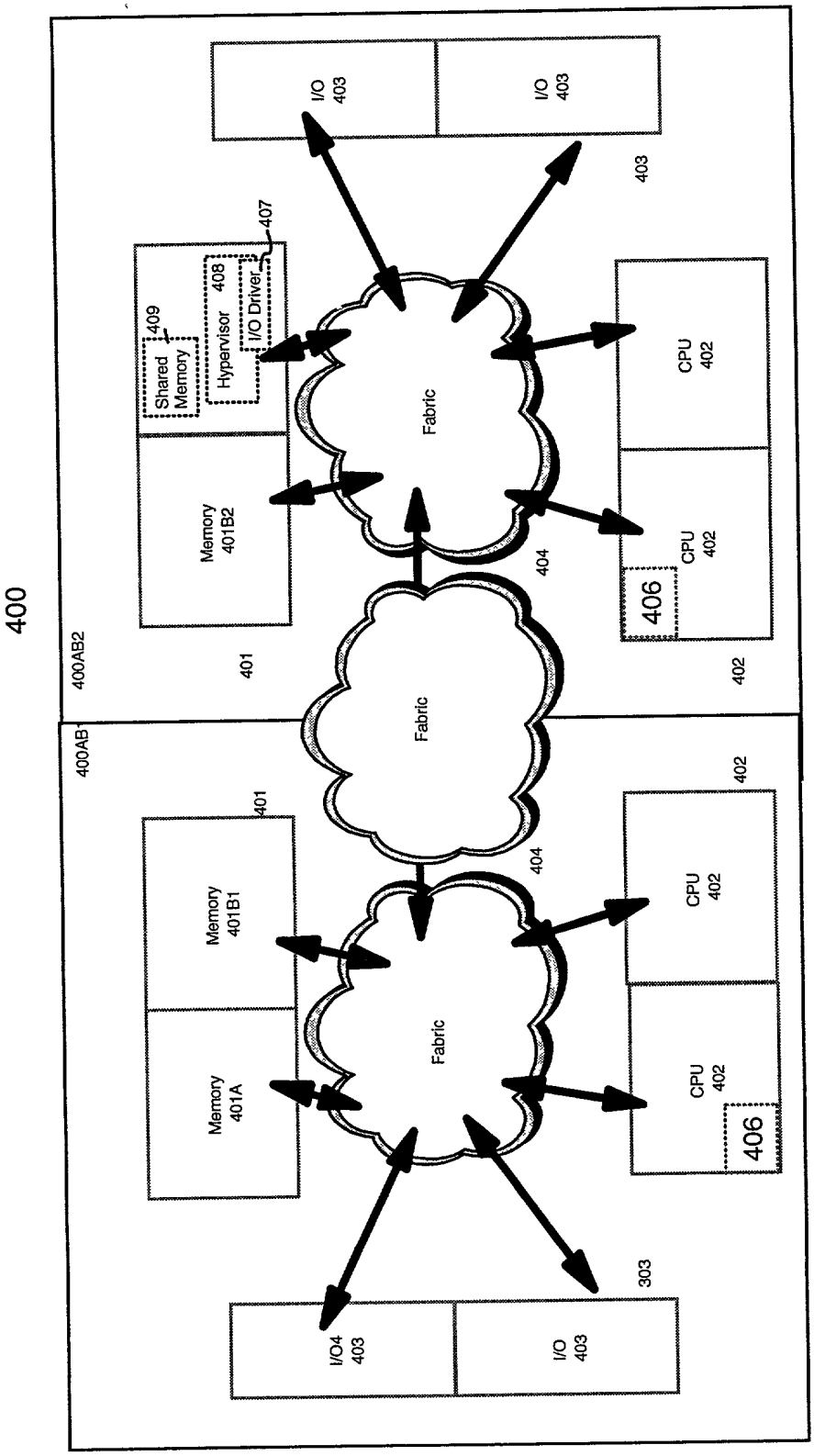
400
400AB2
400AB1
401
Memory 401B2
Shared Memory 409
Hypervisor 408
I/O Driver 407
Memory 401B1
Memory 401A
Fabric
404
CPU 402
406
I/O 403
303

Figure 4

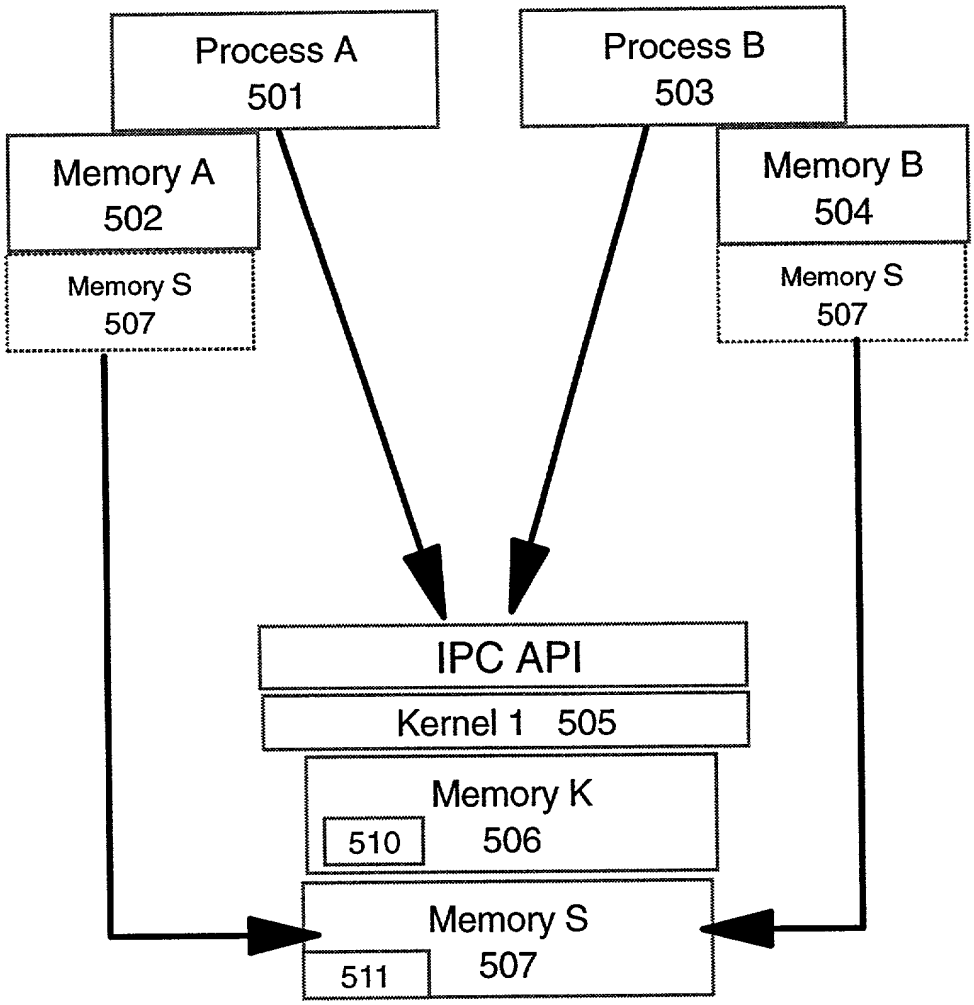
Process A
501
Process B
503
Memory A
502
Memory B
504
Memory S
507
Memory S
507
IPC API
Kernel 1 505
Memory K
510
506
Memory S
511
507

Figure 5

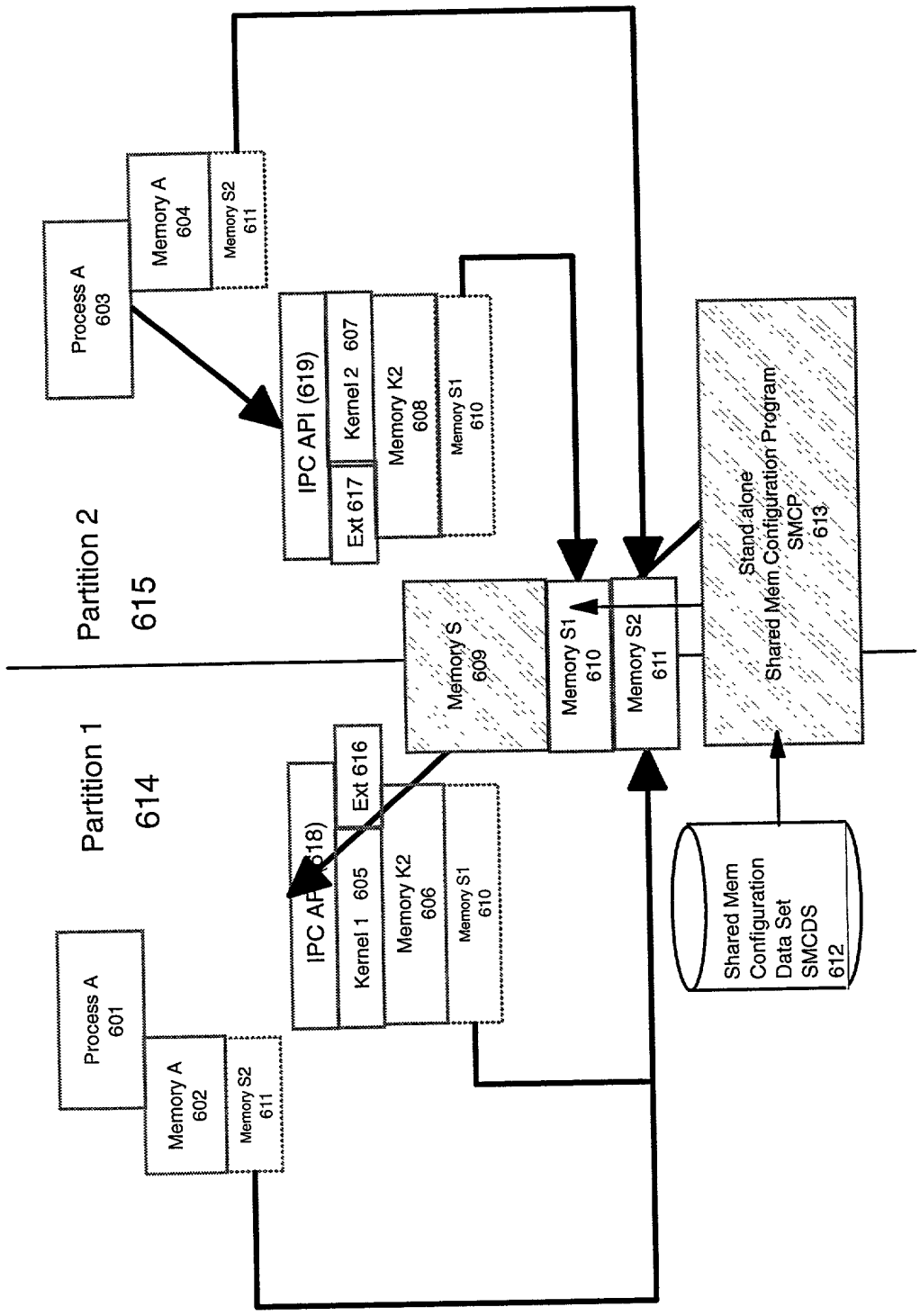
Process A
603
Memory A
604
Memory S2
611
IPC API (619)
Kernel 2 607
Ext 617
Memory K2
608
Memory S1
610
Partition 2
615
Partition 1
614
Process A
601
Memory A
602
Memory S2
611
IPC AP 618)
Kernel 1 605
Ext 616
Memory K2
606
Memory S1
610
Memory S
609
Memory S1
610
Memory S2
611
Stand alone
Shared Mem Configuration Program
SMCP
613
Shared Mem
Configuration
Data Set
SMCDS
612

Figure 6

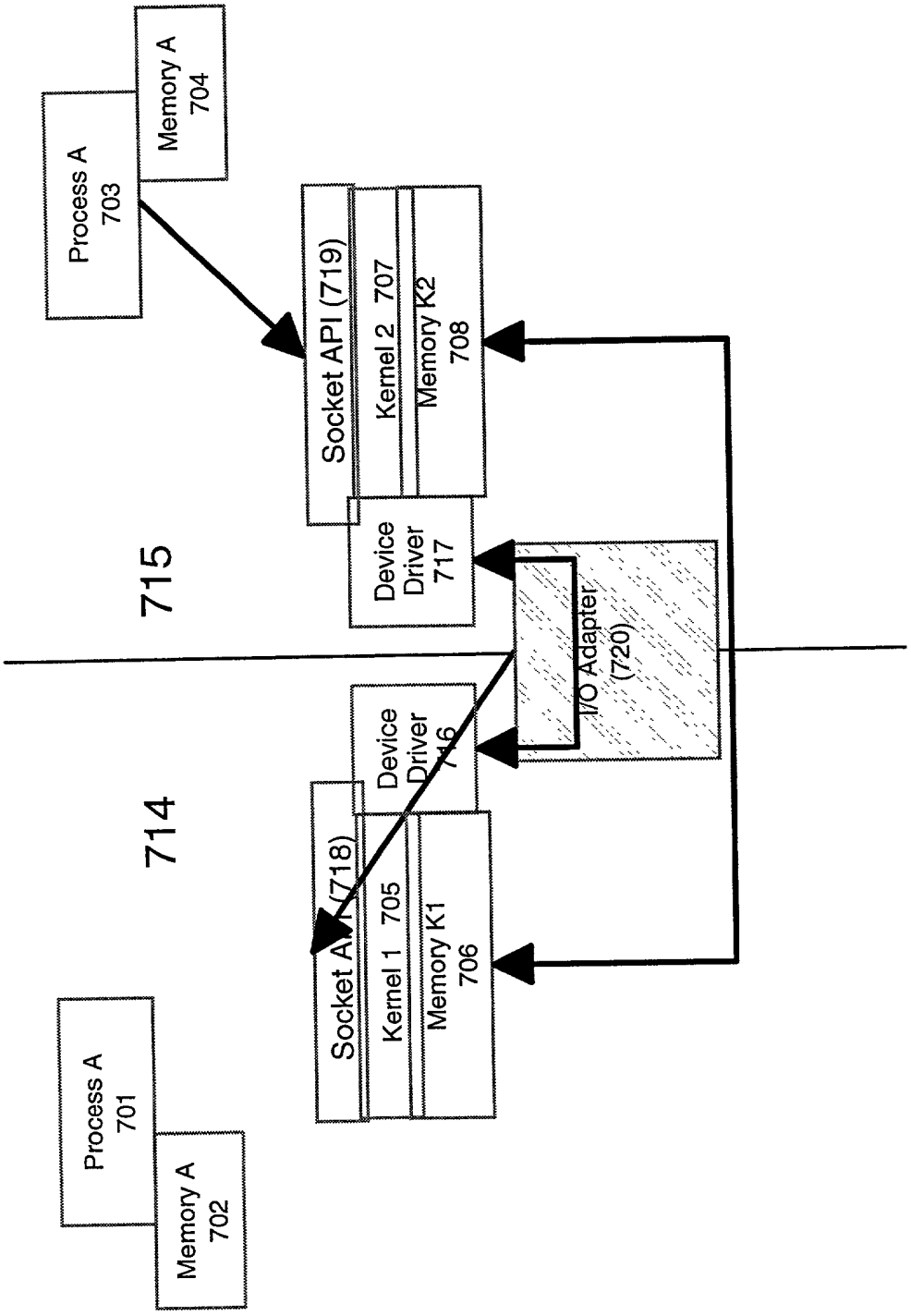
Process A
703
Memory A
704
Socket API (719)
Kernel 2 707
Memory K2
708
715
Device
Driver
717
I/O Adapter
(720)
Device
Driver
716
714
Socket API (718)
Kernel 1 705
Memory K1
706
Process A
701
Memory A
702

Figure 7A

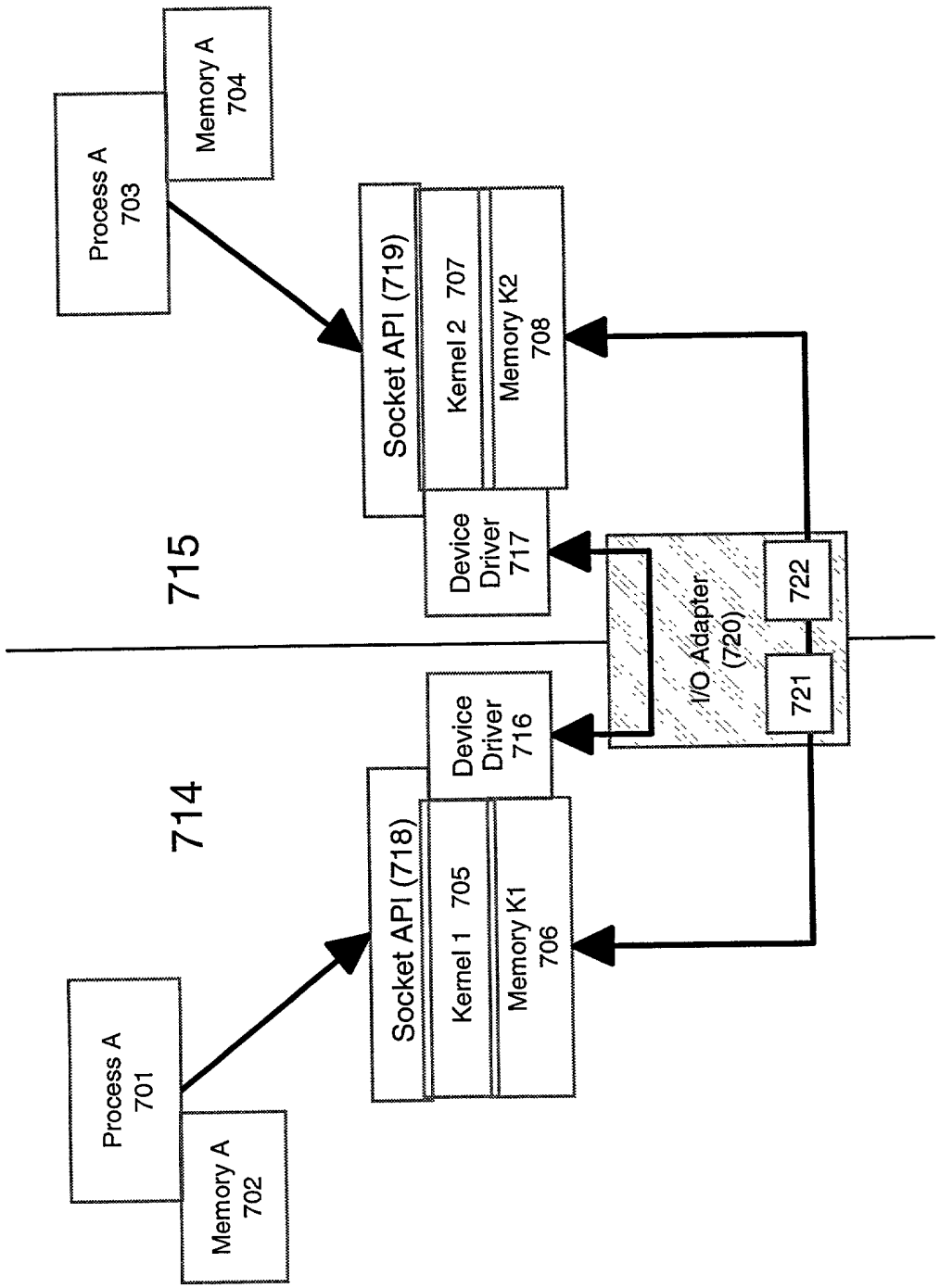
Process A
703
Memory A
704
Socket API (719)
Kernel 2 707
Memory K2
708
Device
Driver
717
715
I/O Adapter
(720)
722
721
Process A
701
Memory A
702
Socket API (718)
Kernel 1 705
Memory K1
706
Device
Driver
716
714

Figure 7B

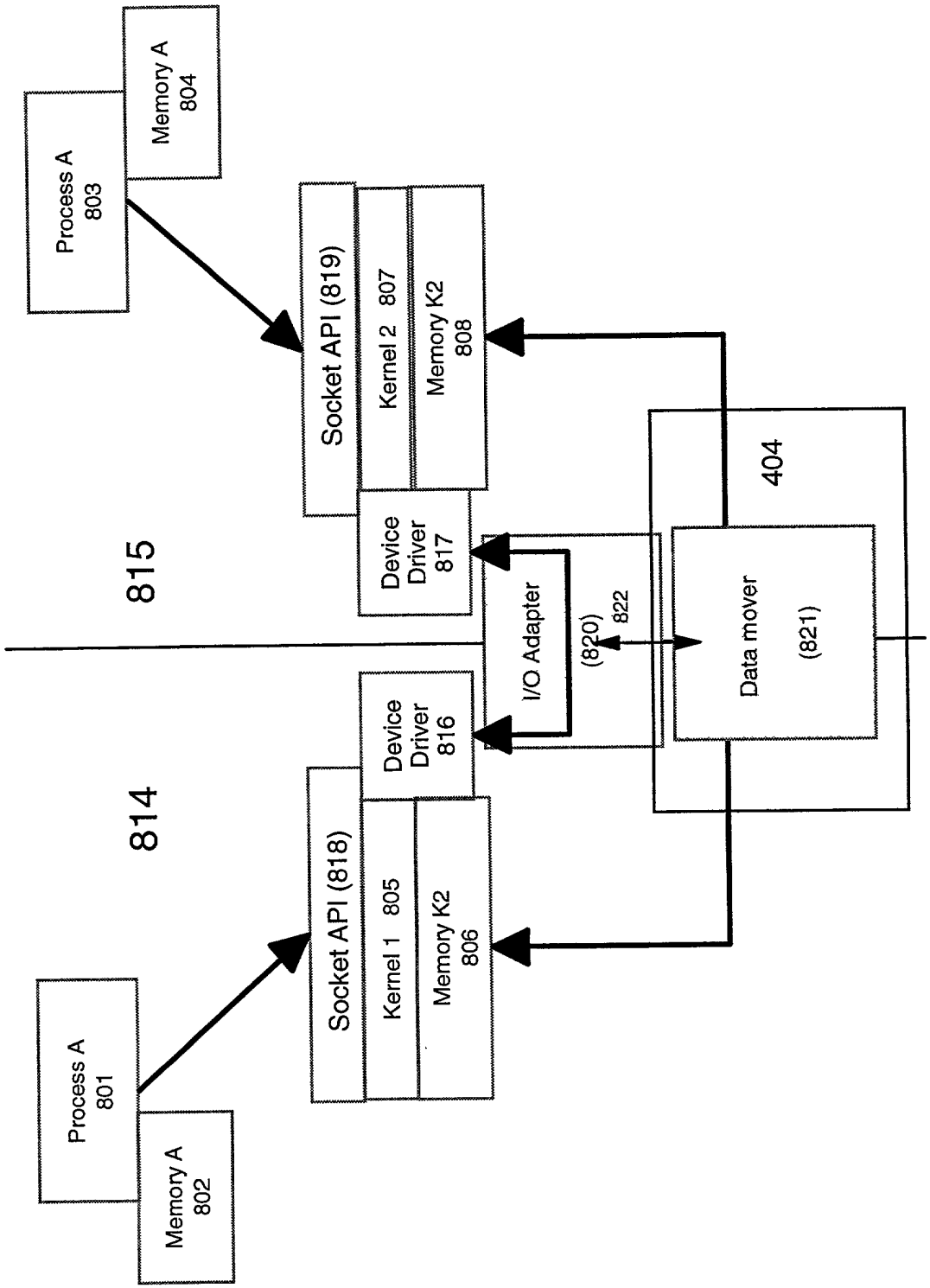
Process A
801
Memory A
802
Socket API (818)
Kernel 1 805
Memory K2
806
Device
Driver
816
814
815
Process A
803
Memory A
804
Socket API (819)
Kernel 2 807
Memory K2
808
Device
Driver
817
I/O Adapter
(820)
822
Data mover
(821)
404

Figure 8

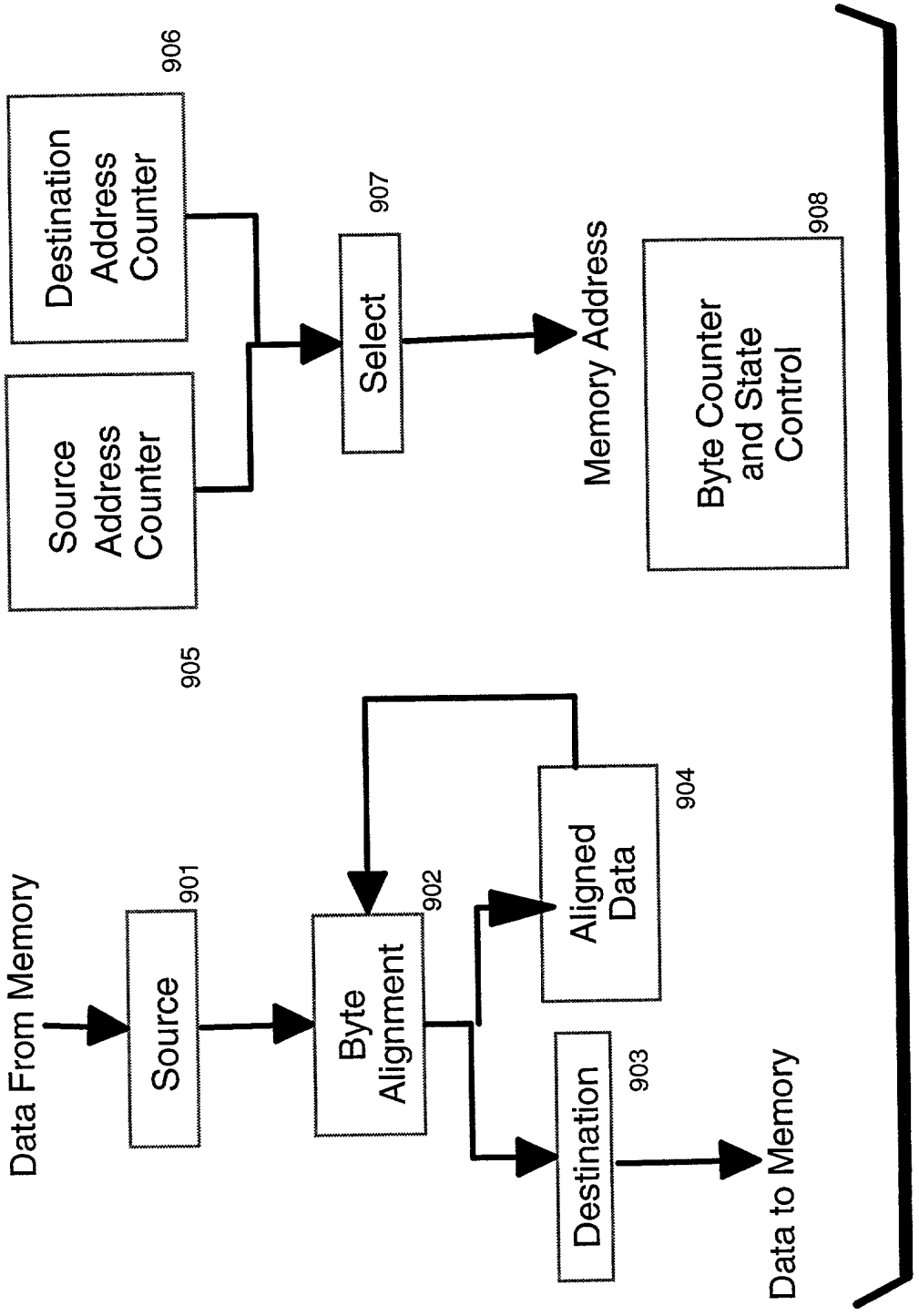
Data From Memory
Source
901
Byte Alignment
902
Aligned Data
904
Destination
903
Data to Memory
Source Address Counter
905
Destination Address Counter
906
Select
907
Memory Address
Byte Counter and State Control
908

Figure 9

1000

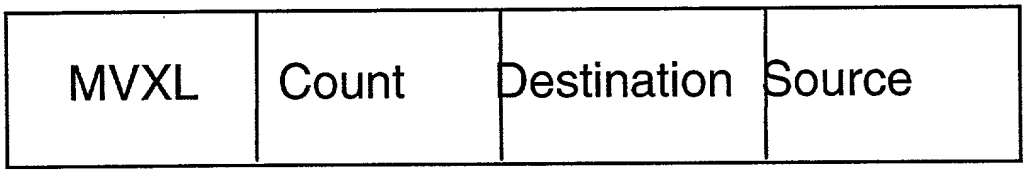

Figure 10

1101. User calls Device Driver
- Supplies
  - Source Network ID
  - Source Offset
  - Destination Network ID

1102. Device driver transfers addresses to Adapter

1103. Adapter Translates Addresses
- Looks up Phyical Base addresses from ID's (Table Lookup)
- Obtains Lock and current Destination Offset
- Adds offsets
- Checks bounds

1104. Adapter loads count and addresses in registers

1105. Adapter executes Data Move

1106. Adapter Frees Lock

1107. Adapter notifies device Driver which "Returns" to user

Figure 11

1201. User calls Device Driver
- Supplies
  - Source Network ID
  - Source Offset
  - Destination Network ID

1202. Device driver sends addresses to adapter

1203. Adapter Translates
- Looks up Phyical Base addresses from ID's (Table Lookup)
- Obtains Lock and current Destination Offset*
- Adds offsets
- Checks bounds
- Returns Lock and Physical addresses to Device Driver

1204. Device Driver executes Data Move

1205. Device Driver Frees Lock

1206. Device Driver Returns

Figure 12

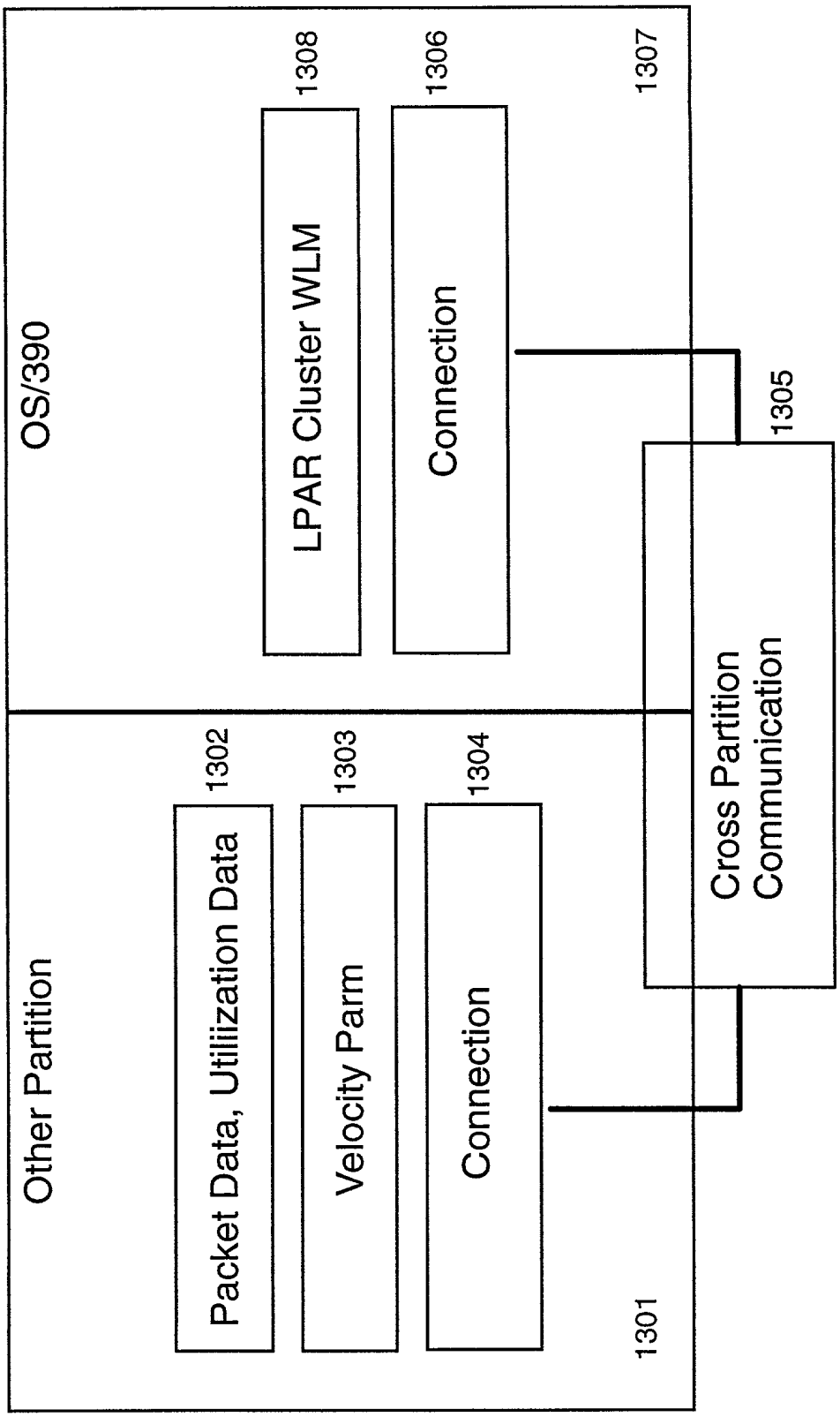
OS/390
1307
LPAR Cluster WLM
1308
Connection
1306
Other Partition
1302
Packet Data, Utilization Data
1303
Velocity Parm
1304
Connection
1301
Cross Partition Communication
1305

Figure 13

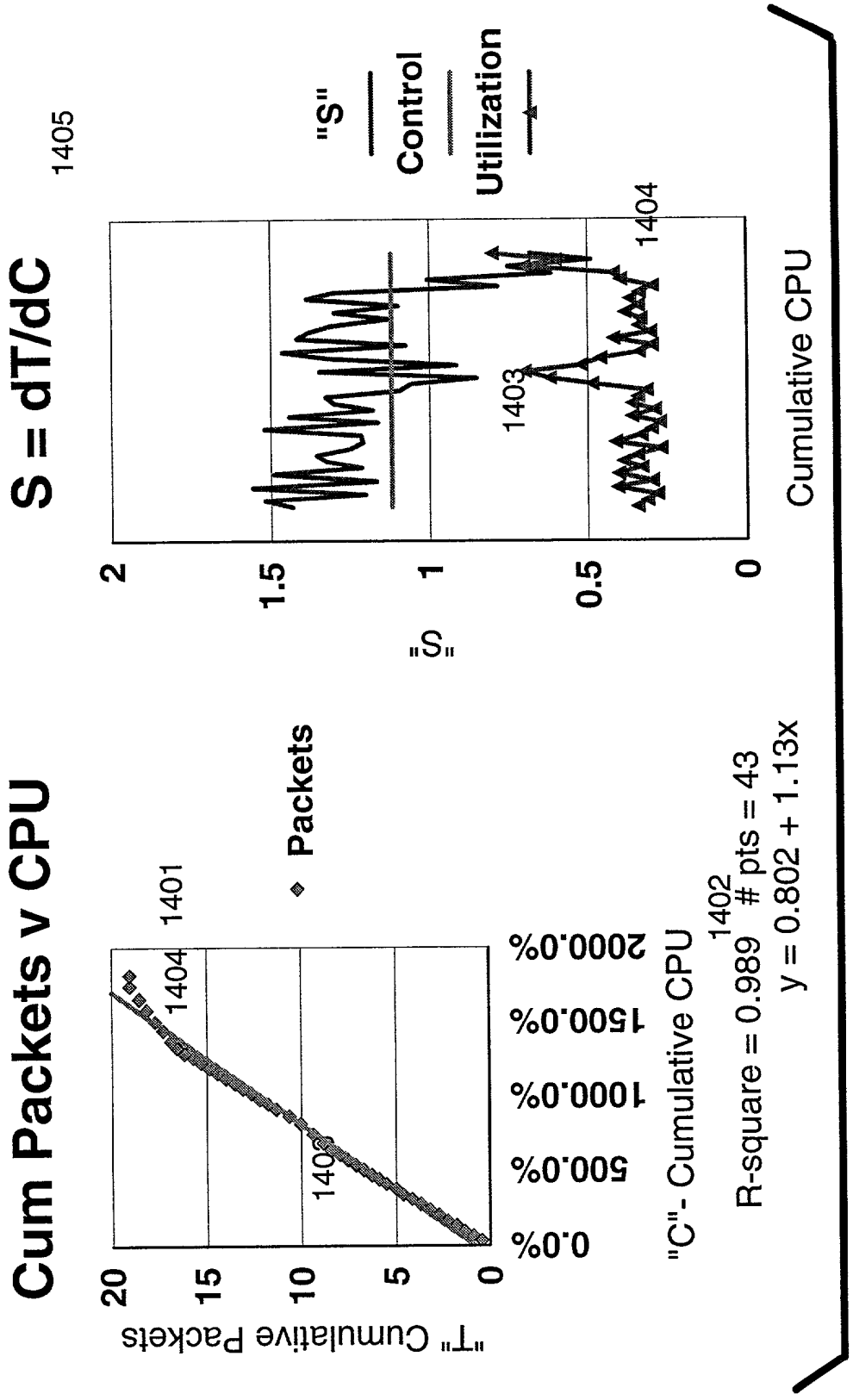
Cum Packets v CPU
S = dT/dC
1405
"S"
Control
Utilization
1404
1403
1401
1404
Packets
1402
R-square = 0.989
# pts = 43
y = 0.802 + 1.13x
"T" Cumulative Packets
"C"- Cumulative CPU
Cumulative CPU
"S"
0
5
10
15
20
0.0%
500.0%
1000.0%
1500.0%
2000.0%
0
0.5
1
1.5
2

Figure 14

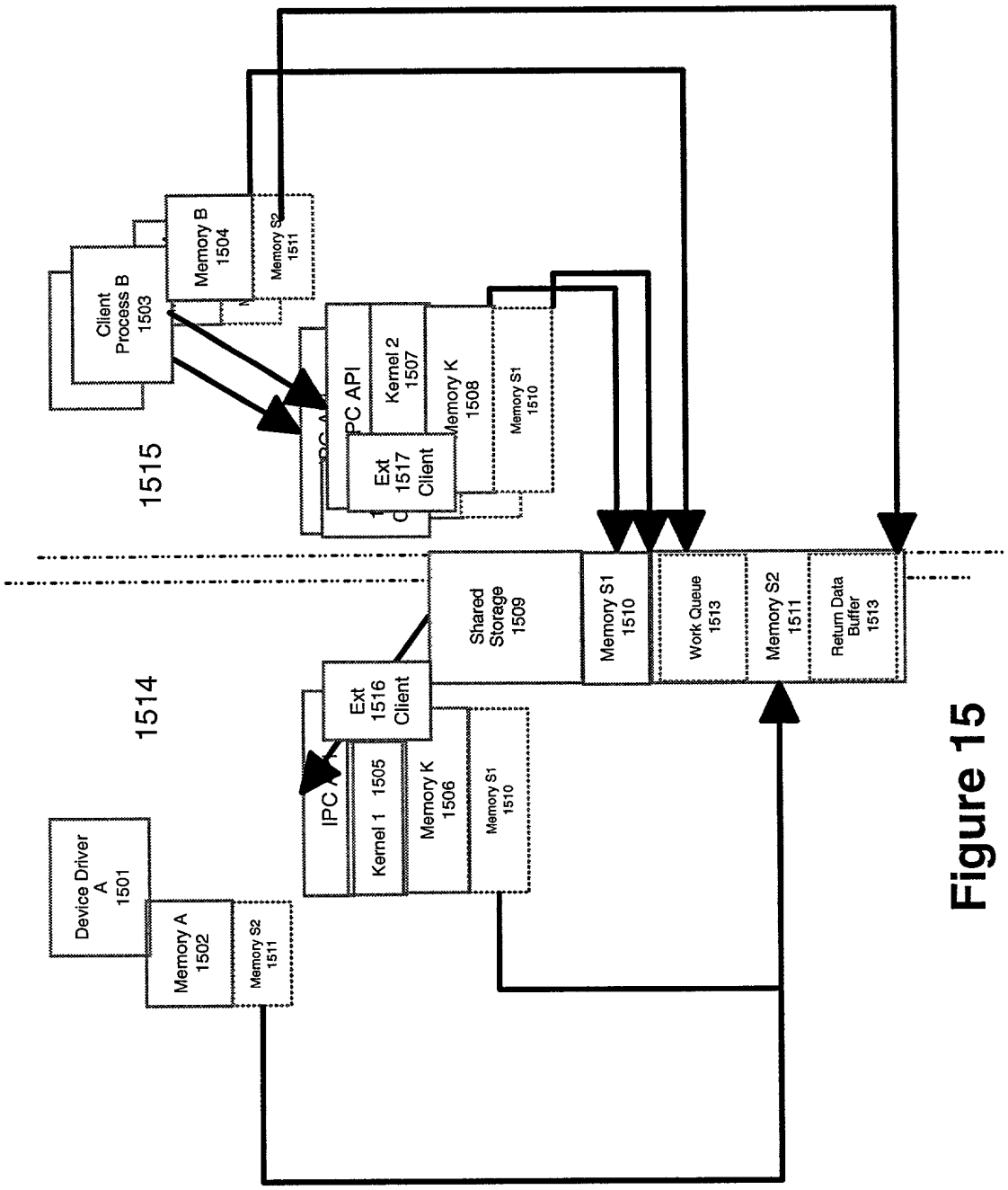
Client Process B 1503
Memory B 1504
Memory S2 1511
1515
IPC API
Kernel 2 1507
Memory K 1508
Memory S1 1510
Ext 1517 Client
Shared Storage 1509
Memory S1 1510
Work Queue 1513
Memory S2 1511
Return Data Buffer 1513
1514
Ext 1516 Client
IPC A
Kernel 1 1505
Memory K 1506
Memory S1 1510
Device Driver A 1501
Memory A 1502
Memory S2 1511

Figure 15

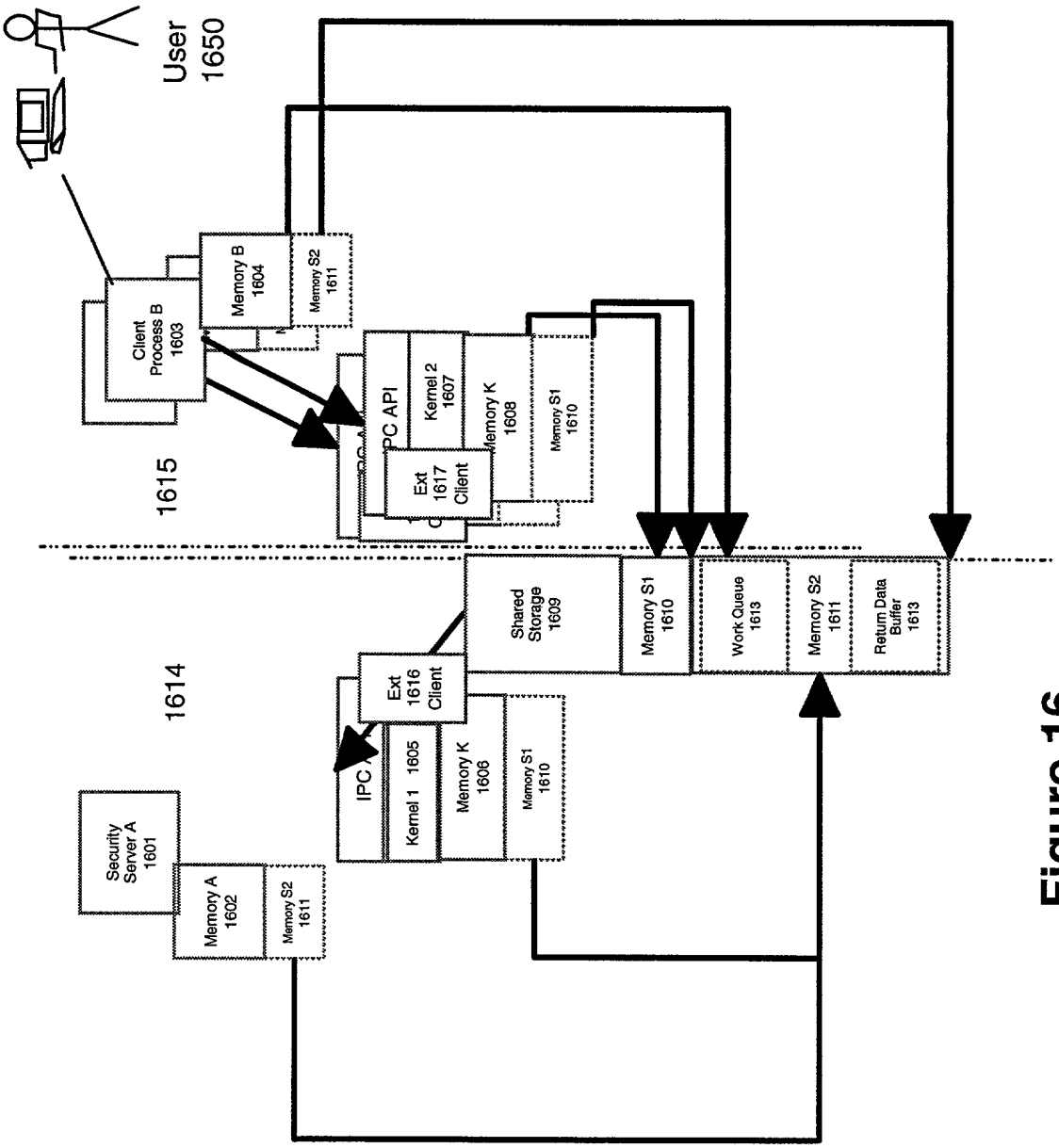
User
1650
Client
Process B
1603
Memory B
1604
Memory S2
1611
1615
IPC API
Kernel 2
1607
Memory K
1608
Memory S1
1610
Ext
1617
Client
Shared
Storage
1609
Memory S1
1610
Work Queue
1613
Memory S2
1611
Return Data
Buffer
1613
1614
Ext
1616
Client
IPC
Kernel 1
1605
Memory K
1606
Memory S1
1610
Security
Server A
1601
Memory A
1602
Memory S2
1611

Figure 16